

FIG. 1 (PRIOR ART)

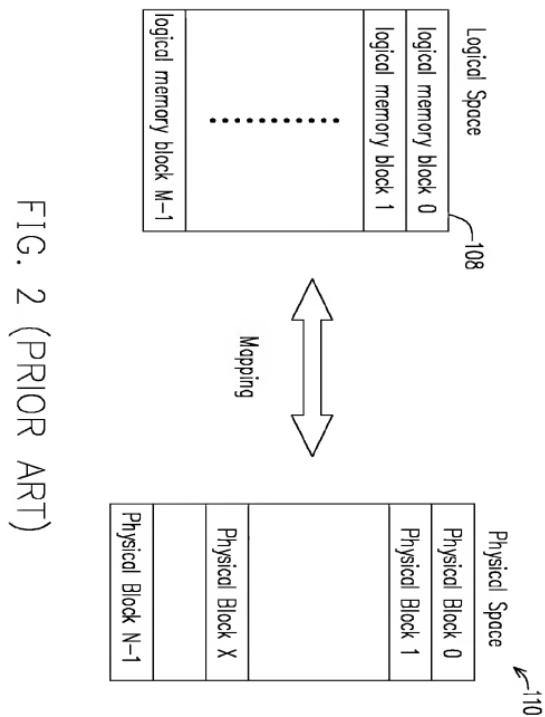


FIG. 2 (PRIOR ART)

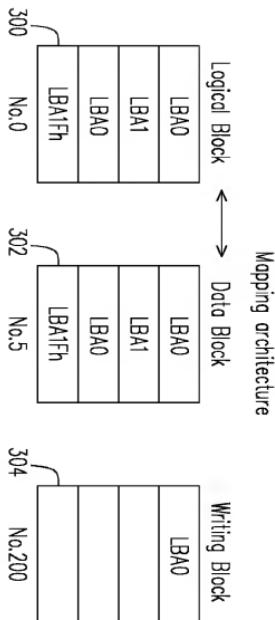


FIG. 3A(PRIOR ART)

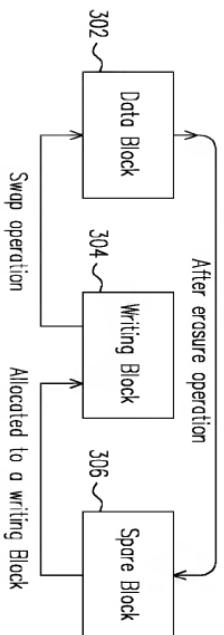


FIG. 3B(PRIOR ART)

Sector Structure in Data Block or Writing Block

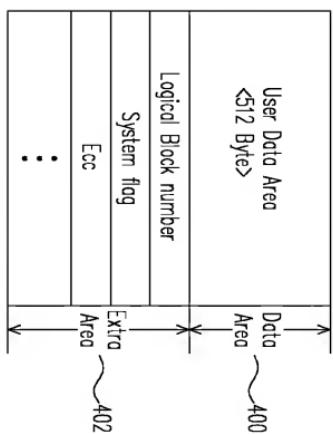


FIG. 4 (PRIOR ART)

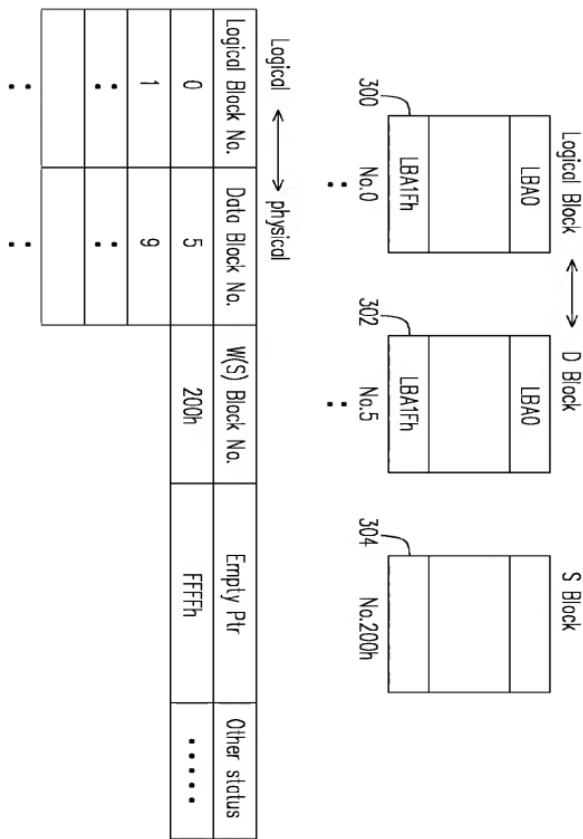


FIG. 5 (PRIOR ART)

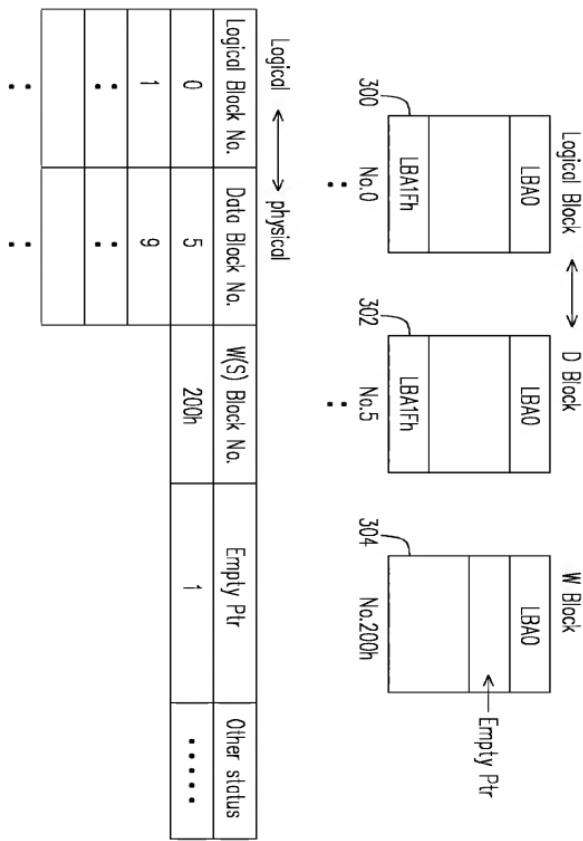


FIG. 6 (PRIOR ART)

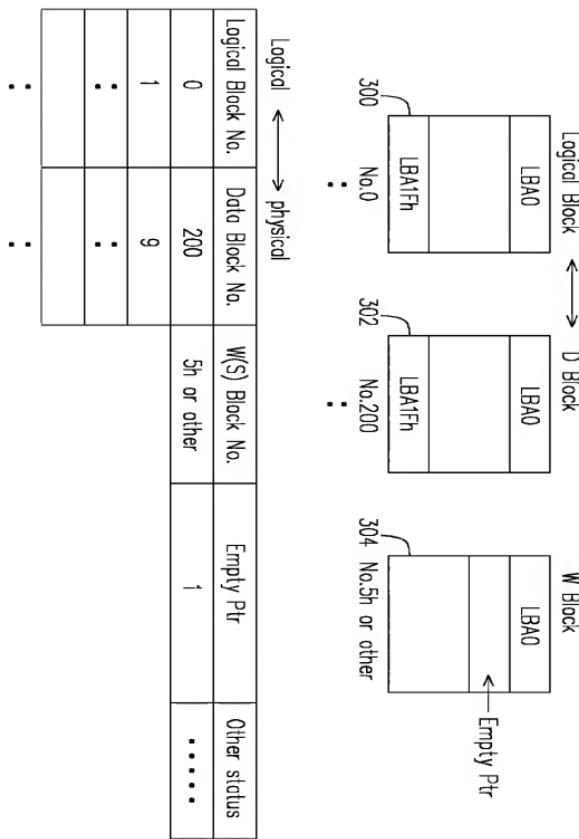
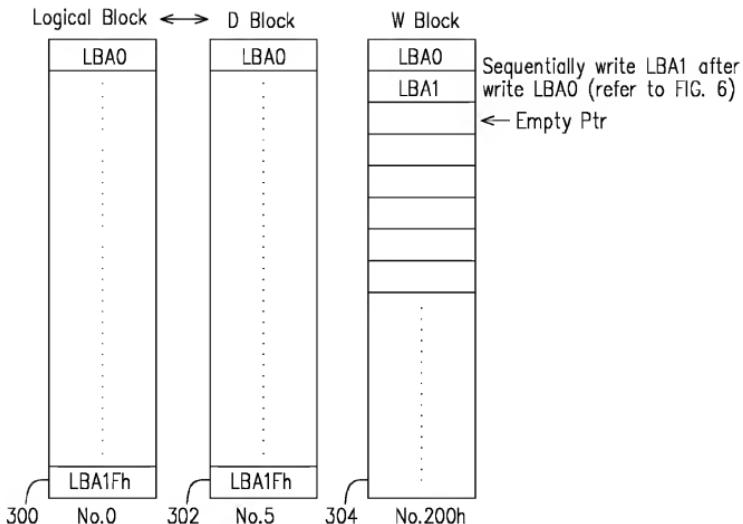


FIG. 7 (PRIOR ART)



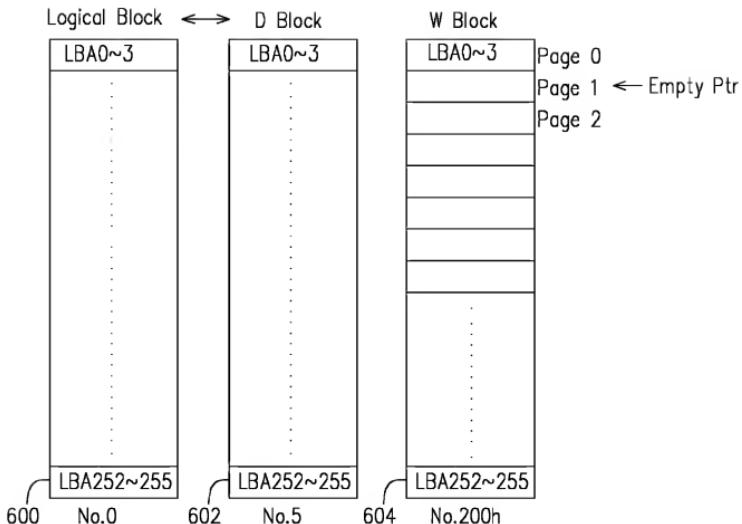
Logical \longleftrightarrow physical

Logical Block No.	Data Block No.	W(S) Block No.	Empty Ptr	Other status
0	5	200h	2	⋮
1	9			
⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮

FIG. 8 (PRIOR ART)

For 4 logical sectors, e.g. LAB0~3	Page 0
For 4 logical sectors, e.g. LAB4~7	Page 1
.....	
.....	Page 63

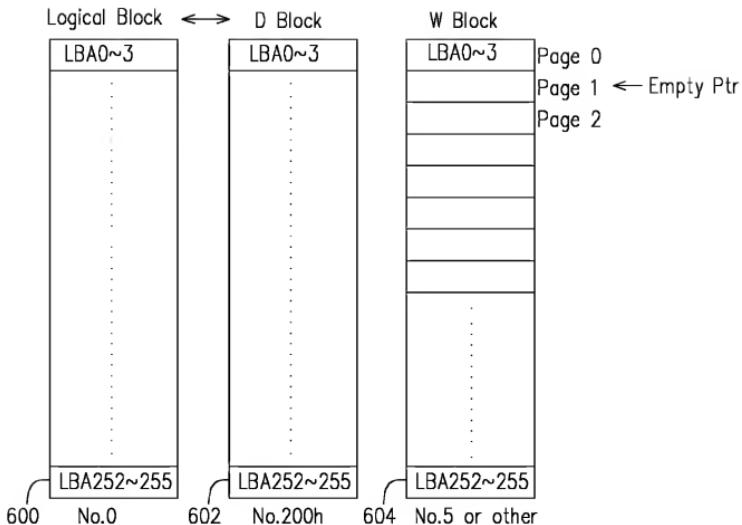
FIG. 9 (PRIOR ART)



Logical \longleftrightarrow physical

Logical Block No.	Data Block No.	W(S) Block No.	Empty Ptr	Other status
0	5	200h	1	⋮
1	9			
⋮	⋮			
⋮	⋮			

FIG. 10(PRIOR ART)



Logical \longleftrightarrow physical

Logical Block No.	Data Block No.	W(S) Block No.	Empty Ptr	Other status
0	200h	5 or other	1	⋮
1	9			
⋮	⋮	⋮	⋮	⋮

FIG. 11(PRIOR ART)

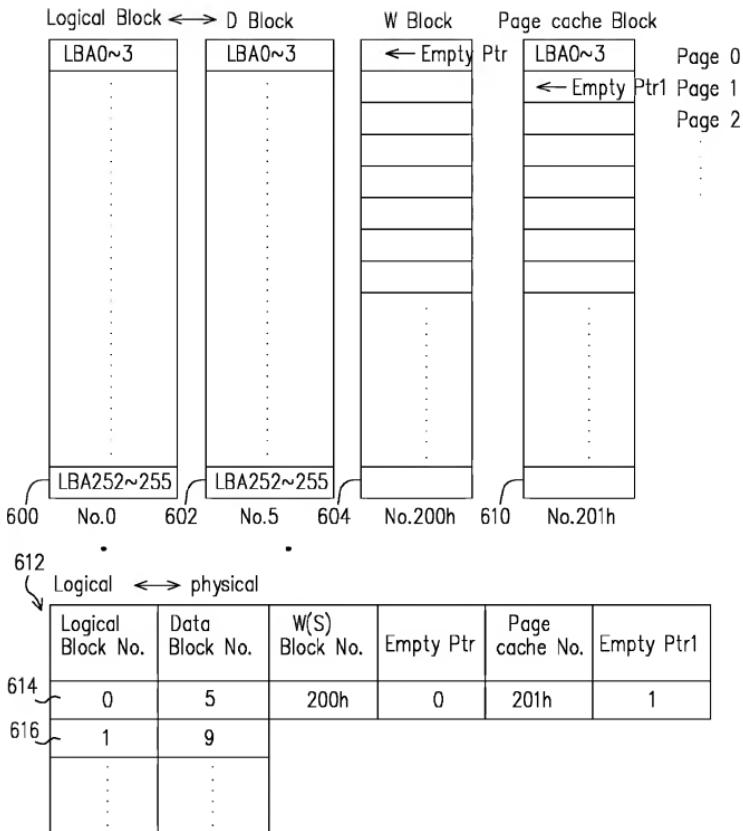


FIG. 12

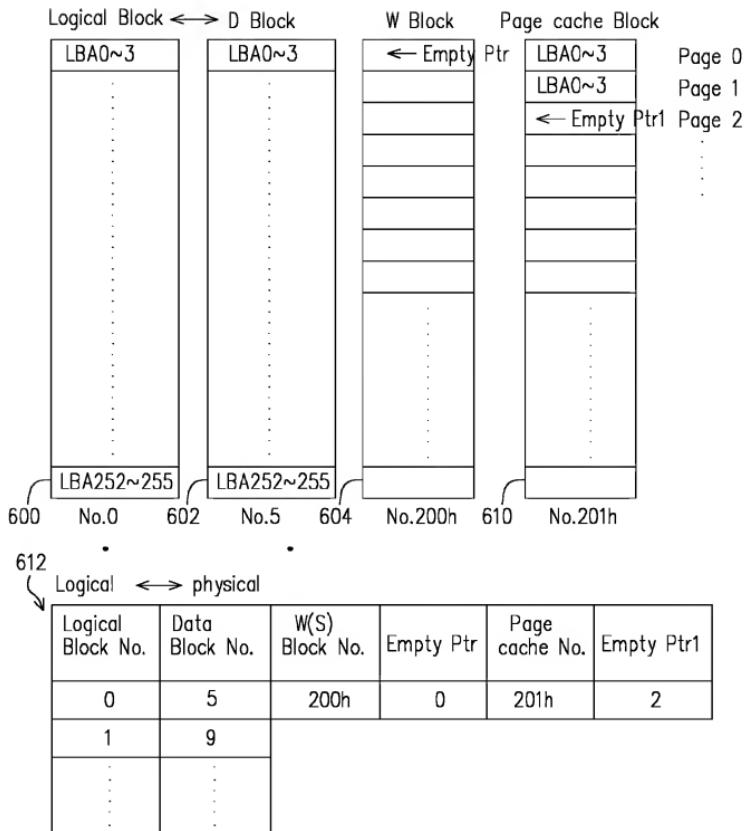


FIG. 13

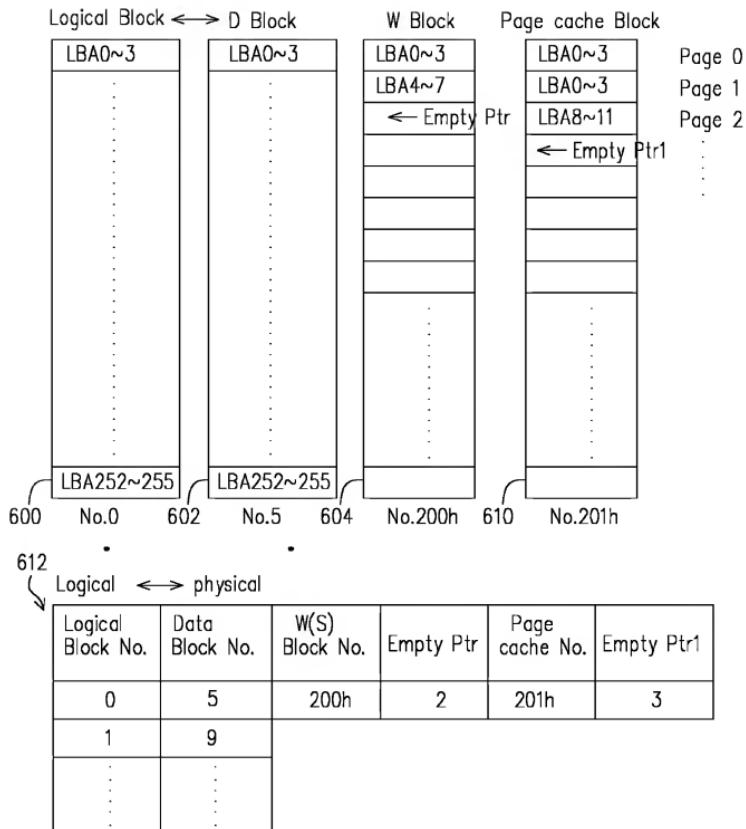


FIG. 14

	Step 1	Step 2	Step 3
Host behavior	Write LBA0,SC=1 Write LBA0,SC=1	Sequentially write LBA1,SC=1	Random write LBA0,SC=10
Controller behavior based on prior algorithm	Write page0 of W block	Overwrite page0 Need swap operation	Overwrite page0 Need swap operation
Controller behavior based on this invention	Write page0 of page cache block	Write page1 of page cache block	Write page0~1 of W block and then write page 2 of page cache

FIG. 15

Sector (512+16B) structure of a page (2048+64B) in a page cache block

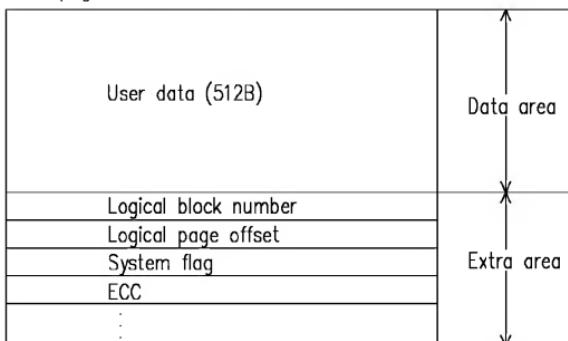


FIG. 16